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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/657,119	09/07/2000	Michael Haden Conner	AUS9-2000-0336-US1	1320

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EXAMINER	
WILSON, ROBERT W	

ART UNIT	PAPER NUMBER
2661	3

DATE MAILED: 03/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/657,119	CONNER ET AL.	
	Examiner	Art Unit	
	Robert W Wilson	2661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 September 2000*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-89* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13,15-24,26-35,37-46,48-62,64-78 and 80-89* is/are rejected.

7)☒ Claim(s) *14,25,36,47,63 and 79* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *9/7/2000*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Detailed Action

1.0 The application of Conner et. al. entitled "METHOD AND APPARATUS FOR PERFORMING A STABLE HASH-BASED MAPPING COMPUTATION IN CONSTANT TIME OVER A DYNAMICALLY VARTING TARGET SET OF COMPUTATIONAL RESOURCES" which was filed on 9/7/2000 without priority. Claims 1-89 are pending.

Drawings

2.0 The drawings in this application are objected to by the Draftsperson as informal. Any drawing corrections requested, but not made in the prior application should be repeated in this application if such changes are still desired. If the drawings were changed and approved during the prosecution of the prior application, a petition may be filed under 37 CFR 1.182 requesting the transfer of such drawings, provided the parent application has been abandoned. However, a copy of the drawings as originally filed must be included in the 37 CFR 1.60 application papers to indicate the original content.

Claim Rejections - 35 USC § 103

3.0 The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Connell et. al. (U.S. Patent No.: 6,661,787)

Referring to **Claim 1**, O'Connell teaches: router (col. 2 line 42); computer readable medium (Tables & pointers per Fig 3); plurality of links (It would have been obvious to one of ordinary skill in the art at the time of the invention that a router is associated with multiple links in order for the invention to work); retrieving means (34 per Fig 3); reading means (Fig 3); modifying means (413 per Fig 5 provides address to switching engine. It would have been obvious to one of ordinary skill in the art at the time of the invention that the address is provided to the switching engine in order to modify the packet for forwarding in order for the invention to work.)

O'Connell does not expressly call for: computer readable medium but teaches pointers & tables per Fig 3 or software functions.

It would have been obvious to one of ordinary skill in the art at the time of the invention to store the software of O'Connell on a computer readable medium so that the software can be utilized in the router in order for the invention to work.

Referring to **Claim 4**, O'Connell teaches: Method (Fig 3); receiving a packet (Fig 3 or col. 4 line 19); retrieving (33 per Fig 3); reading (Fig 3); modifying the data packet as a next-hop destination address (413 per Fig 5 provides address to switching engine); transmitting the modified packet (413 per Fig 5 provides address to switching engine)

O'Connell does not expressly call for: modifying as a next-hop destination address but teaches 413 per Fig 5 provides the address to the switching engine.

It would have been obvious to one of ordinary skill in the art at the time of the invention that the address is forwarded to the switching engine so the packet can be modified and forwarded to the next hop destination address.

In Addition:

Regarding **Claims 2, 5, 3, & 6**; O'Connell teaches the router of **Claim 1** and the routing method of **Claim 4** as explained above.

Regarding **Claim 2 & 5**, means and method to computer table index (Fig 3)
Regarding **Claims 3 & 6**, means and method to: obtain target addresses (Fig 3); storing in each table entry a target address (Fig 3)

Referring to **Claim 7**, Method (Fig 3); data structure (Fig 3); computer readable medium (Tables & pointer per Fig 3); source Id (33 per Fig 3); hashing (34 per Fig 3); location Id (Output of Has per Fig 3 or key); target identifier (L3 pointer per Fig 3 which relates to L2 pointer, L2 data or L3 data or more than one location); processing speed independent of total # of target Ids (It would have been obvious to one of ordinary skill in the art at the time of the invention that the hashing function of the cited reference does not require that every pointer in the table be searched so that consequently the invention cited processing speed is independent of the total # of target ids.)

O'Connell does not expressly call for: computer readable medium but teaches pointers & tables per Fig 3 or software functions.

It would have been obvious to one of ordinary skill in the art at the time of the invention to store the software of O'Connell on a computer readable medium so that the software can be utilized in the router in order for the invention to work.

In Addition:

Regarding **Claim 8**, wherein the method for mapping the source identifier to the target is stable with respect to changes in the set of target identifiers (The applicant broadly claims "stable". The examiner interprets "stable" the function of Fig 3 does not blow up or is stable)

Claim Rejections - 35 USC § 103

4.0 The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 9-13, 15-24, 26-35, 37-46, 48-57, 59-62, 64-78, & 81-89 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rostoker et. al. (U.S. Patent No.: 5,708,659)

Referring to **Claim 9**, Rostoker teaches: Method (Fig 30, 33, 46, & 47 or col. 19 line 32-col. 21 line 4); Source identifier (packet address per Fig 30, 33, 46, & 47 or col. 19 line 32-col. 21 line 4); target identifier (address information per Fig 30, 33, 46, & 47 or col. 19 line 32-col. 21 line 4), table index (key per Fig 30, 33, 46, & 47 or col. 19 line 32-col. 21 line 4), hashing (hash per Fig 30, 33, 46, & 47 or col. 19 line 32-col. 21 line 4)

Rostoker does not expressly call for: target identifier has been related to the stored in the table entry based on a computed value from a relation computation using the table index and the target identifier as operands in the relation computation but teaches address info hashed to determine key index that is utilized to determine address info re-computing the address info based upon the index and address info in the event that the contents do not match per col. 19 line 32-col. 21 line 4)

It would have been obvious to one of ordinary skill in the art at the time of the invention that having the address info hashed to determine key index that is utilized to determine address info re-computing the address info based upon the index and address info in the event that the contents do not match per col. 19 line 32-col. 21 line 4 performs the same function as the target identifier has been related to the stored in the table entry based on a computed value from a relation computation using the table index and the target identifier as operands in the relation computation

Referring to **Claim 20**, It is within the level of one skill in the art at the time of the invention to implement the method of Claim 9 in hardware and software or to develop an apparatus with a

means to perform the method of Claim 9 utilizing a means. Refer to Claim 9 rejection for details associated with the method rejection.

Referring to **Claim 31**, It is within the level of one skilled in the art at the time of the invention to implement the method of Claim 9 above in hardware and software or computer program. It would have been obvious to one of ordinary skill in the art to store the software or computer program on a computer readable medium in order to make the invention work. Refer to Claim 9 rejection for more details.

In Addition:

Regarding Claims **10-19, 21-30, & 32-41**; Rostoker teaches: the Method of Claim 9, the apparatus with means of Claim 20, and the computer readable medium of Claim 31.

Regarding **Claims 10, 21, & 32**, method, means, and computer readable medium:
Using the target identifier as input (The address info or target identifier is used as an input per col. 19 line 32-col. 21 line 4)

Regarding **Claims 11, 22, & 33**, method, means, and computer readable medium:
Storing in a table entry it related target identifier (col. 19 line 32-col. 21 line 4)

Regarding **Claims 12, 23, & 34,** method, means, and computer readable medium:
Dynamically removing a target identifier o obtain a modified set of target identifier (col. 19 line 32-col. 21 line 4); remove the target identifier, remove the target identifier from the set of target identifiers (col. 19 line 32-col. 21 line 4); storing in a table entry it newly related target identifier (col. 19 line 32-col. 21 line 4. the reference teaches that the address is incremented by one if the contents does not match and the previous address is removed from the search.)

Regarding **Claims 13, 24, & 35**, method, means, and computer readable medium:
Dynamically adding a target identifier from the modified set of target identifiers to a table entry such that each table entry is related with only one target identifier (col. 19 line 32-col. 21 line 4); for each table entry, relating a target identifier to a table entry such that each table entry is related with only one target identifier (col. 19 line 32-col. 21 line 4); for each table entry, storing in a table entry its related target identifier if its related target identifier differs from a target identifier previously store in the table entry (col. 19 line 32-col. 21 line 4. The reference teaches that target id is incremented if match does not occur which results in incrementing the address info by one or dynamically adding)

Regarding **Claim 15, 26, & 37**, method, means, and computer readable medium:
Target identifier related to one computational resource (The applicant broadly claims "one computation resource". The examiner interprets the reference teaches target id related to destination address which is stored in a table or one computational resource per col. 19 line 32-col. 21 line 4).

Regarding **Claims 16, 27, and 38**, method, means, and computer readable medium: target identifiers is proportional to the computational capacity of computer resources (The maximum number of address info or target identifiers is proportional to the capacity of the table per col. 19 line 32-col. 21 line 4)

Regarding **Claims 17, 28, & 39**, method, means, and computer readable medium: source identifier is a network protocol address (packet address is a network protocol address per Abstract)

Regarding **Claims 18, 29, & 40**, method, means, and computer readable medium: target identifier is a network physical address (The applicant broadly claims "network physical address". The address info or target address is an address to a location in a table or a "network physical address "per col. 19 line 32-col. 21 line 4)

Regarding **Claims 19, 30, & 41**, method, means, and computer readable medium: wherein the target identifier is a Uniform Resource Identifier (URI) (The applicant broadly claims "URI". The examiner interprets "address info" or target identifier as a URI.)

Referring to **Claim 42**, Rostoker teaches: Method (Fig 30, 33, 46, & 47 or col. 19 line 32-col. 21 line 4); Source identifier (packet address per Fig 30, 33, 46, & 47 or col. 19 line 32-col. 21 line 4); hashing (hash per Fig 30, 33, 46, & 47 or col. 19 line 32-col. 21 line 4); target identifier (address information per Fig 30, 33, 46, & 47 or col. 19 line 32-col. 21 line 4); location identifier (key per Fig 30, 33, 46, & 47 or col. 19 line 32-col. 21 line 4), computer readable medium (table or software per Fig 30, 33, 46, & 47 or col. 19 line 32-col. 21 line 4. It would have been obvious to one of ordinary skill in the art at the time of the invention to load the software on a computer readable medium in order for the invention to work)

Rostoker does not expressly call for: wherein the information associated with the target identifier has been related to and stored in the entry based on a computed value from a relation computation using the location identifier and the target identifier as operands in the relation computation but teaches packet address is hashed to form an index to address info in a table where the information is searched and if a match relative to content is not met then the index plus the address info is used in a relationship which is incremented by one and the search goes on per col. 19 line 32-col. 21 line 4).

It would have been obvious to one of ordinary skill in the art at the time of the invention that utilizing packet address is hashed to form an index to address info in a table where the information is searched and if a match relative to content is not met then the index plus the address info is used in a relationship which is incremented by one and the search goes performs the same function as wherein the information associated with the target identifier has been related to and stored in the entry based on a computed value from a relation computation using the location identifier and the target identifier as operands in the relation computation

Referring to **Claim 58**, It is within the level of one skill in the art at the time of the invention to implement the method of Claim 9 in hardware and software or to develop an apparatus with a means to perform the method of Claim 9 utilizing a means. Refer to Claim 9 rejection for details associated with the method rejection.

Referring to **Claim 74**, It is within the level of one skilled in the art at the time of the invention to implement the method of Claim 9 above in hardware and software or computer program. It would have been obvious to one of ordinary skill in the art to store the software or computer program on a computer readable medium in order to make the invention work. Refer to Claim 9 rejection for more details.

In Addition:

Regarding **Claims 43-46, 48-57, 59-62, 64-73, 75-78, & 80-89**; Rostoker teaches: the Method of **Claim 42**, the apparatus with means of **Claim 58**, and the computer readable medium of **Claim 74.**

Regarding **Claims 43, 59, & 75**, method, means, and computer readable medium:
Using the target identifier as input (The address info or target identifier is used as an input per col. 19 line 32-col. 21 line 4)

Regarding **Claims 44, 60, & 76**, method, means, and computer readable medium:
Storing target identifier in data structure (col. 19 line 32-col. 21 line 4)

Regarding **Claims 45, 61, & 77,** method, means, and computer readable medium:
For each entry in the data structure previously related to the removed target identifier, storing in entry information associated with its newly related target identifier (col. 19 line 32-col. 21 line 4. The reference teaches that the address is incremented by one if the contents does not match and the previous address is removed from the search.)

Regarding **Claims 46, 62, & 78**, method, means, and computer readable medium:
Dynamically adding a target identifier from the modified set of target identifiers in the data structure (col. 19 line 32-col. 21 line 4); for each entry in the data structure, storing in an entry information associated with its related target identifier if its related target identifier differs from a target identifier previously related to the entry in the data structure (col. 19 line 32-col. 21 line 4. The reference teaches that target id is incremented if match does not occur which results in incrementing the address info by one or dynamically adding)

Regarding **Claim 48, 63, & 79**, method, means, and computer readable medium:
Target identifier related to one computational resource (The applicant broadly claims "one computation resource". The examiner interprets the reference teaches target id related to destination address which is stored in a table or one computational resource per col. 19 line 32-col. 21 line 4).
method, means, and computer readable medium

Regarding **Claims 49, 64, & 80**, method, means, and computer readable medium: target identifiers is proportional to the computational capacity of computer resources (The maximum number of address info or target identifiers is proportional to the capacity of the table per col. 19 line 32-col. 21 line 4)

Regarding **Claims 50, 65, and 81**, method, means, and computer readable medium: retrieving a target identifier using the information associated with the target identifier (col. 19 line 32-col. 21 line 4); Performing a computation process on a computation resource identified by the target identifier (col. 19 line 32-col. 21 line 4)

Regarding **Claims 51, 66, and 82**, method, means, and computer readable medium: wherein the wherein the computational resource identified by the target identifier is a memory resource (address info or target identifier utilized to address a table which is a memory resource per col. 19 line 32-col. 21 line 4)

Regarding **Claims 52, 67, and 83**, method, means, and computer readable medium: wherein the target identifier is a data processing system (address info or target identifier utilized to address a table which is a part of a data processing system per col. 19 line 32-col. 21 line 4)

Regarding **Claims 53, 68, and 84**, method, means, and computer readable medium: wherein the target identifier is a target identifier (address info is a target identifier m per col. 19 line 32-col. 21 line 4)

Regarding **Claims 54, 69, and 85**, method, means, and computer readable medium: wherein the data structure is a table, and the location identifier is a table index (col. 19 line 32-col. 21 line 4)

Regarding **Claims 55, 71, & 87**, method, means, and computer readable medium: source identifier is a network protocol address (packet address is a network protocol address per Abstract)

Regarding **Claims 56, 72, & 88,** method, means, and computer readable medium: target identifier is a network physical address (The applicant broadly claims "network physical address". The address info or target address is an address to a location in a table or a "network physical address "per col. 19 line 32-col. 21 line 4)

Regarding **Claims 57, 73, & 89**, method, means, and computer readable medium: wherein the target identifier is a Uniform Resource Identifier (URI) (The applicant broadly claims "URI". The examiner interprets "address info" or target identifier as a URI.)

Claim Objections

5.0 Claims 14, 25, 36, 47, 63, & 79 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The present invention is directed to a hashing method, apparatus, and program on a computer readable medium: that hashes an address to form a table index and target identifier, then hashes the table index to form a first hash value, then hashes the target identifier to define a second hash value, then has the first has value and the 2nd has value to generate a computed value. The closest prior art is Rostoker (U.S. Patent No.: 5,708,659). Rostoker teaches a method of hashing an address to form an index as well as defining address info for a table. Rostoker teaches a method of iterating within the table for a value in the table based upon relationship between the index and the information address. The closest prior art, Rostoker (U.S. Patent No.: 5,708,659) does not disclose either singularly or in combination anticipate or render the following limitations obvious in the context of the dependent claims 14, 25, 36, 47, 63, & 79 when they are rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

6.0 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert W Wilson whose telephone number is 703/305-4102. The examiner can normally be reached on M-F (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas Olms can be reached on (703) 305-4703. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.

Robert W. Wilson

Robert W Wilson
Examiner
Art Unit 2661

RWW
February 23, 2004

DUNG TON
PRIMARY EXAMINER